The

Geophysical Journal

of the

Royal Astronomical Society

Volume 8

Covering the period
1963 July to 1964 July

Published and Sold by the

Royal Astronomical Society
Burlington House, London, W.1, England

1964

INDEX

PAGE

Airglow: Polar-cap airglow and the terrestrial ambium, M. Gadsden and D. W. Sida 102

Ade-Hall, J. M., Electron probe microanalyser analyses of basaltic titanomagnetites and their significance to rock magnetism 301

Ade-Hall, J. M., A correlation between remanent magnetism and petrological and chemical properties of tertiary basalt lavas from Mull, Scotland 403

Arnold, E. P., H. Jeffreys and M. Shinshoni, S in three European earthquakes .. 12

Asbel, I. J. and T. B. Yanovskaya, The determination of velocities in the upper mantle from the observations on *P*-waves 313

Båth, M. and G. P. Subiza, Core phases and the inner core boundary 496

Bentley, C. R. and N. A. Ostenso, Antarctic crustal thickness 467

Bodvarsson, G. and G. P. L. Walker, Crustal drift in Iceland 285

Book Reviews: *Geophysics. The Earth's Environment* 146

Continental Drift 147

Astrophysical Quantities 272

Space Chemistry 273

Encyclopedia of Physics—Astrophysics V (Flügge) 274

Elsevier's Dictionary of General Physics in Six Languages 275

Theoretical Interpretations of Upper Atmosphere Emissions 275

Cosmic Rays 276

Proceedings of the International Conference on the Ionosphere 277

A Treatise on Radiative Transfer 278

IUGG Monograph 22—Investigations of the Earth's Crust 280

Solar Corona 343

Textbook of Dynamics 468

Radioactive Dating 469

The Physical Constitution of the Earth 470

Chapman, S., The energy of magnetic storms 514

Cole, K. D., Polar geomagnetic disturbance 268

Continental Structure: Crustal drift in Iceland, G. Bodvarsson and G. P. L. Walker 285

——, Antarctic crustal thickness, C. R. Bentley and N. A. Ostenso 467

——, A geophysical study of the Red Sea, C. L. Drake and R. W. Girdler 473

Cook, G. E., J. M. Rees, and D. G. King-Hele, Determination of the even harmonics in the Earth's gravitational potential 119

Cox, A., Angular dispersion due to random magnetization 345

Darbyshire, J., A study of microseisms in South Africa.. 165

Donato, R. J., The *S* head wave at a liquid–solid boundary 17

Donato, R. J., Amplitude of the head wave near the critical angle 203

Drake, C. L. and R. W. Girdler, A geophysical study of the Red Sea 473

Dutta, S., Note on the propagation of Love waves in a certain type of heterogeneous layer lying on homogeneous medium 231

Earth—Gravity Field: Determination of the even harmonics in the Earth's gravitational potential, D. G. King-Hele, G. E. Cook and J. M. Rees 119

——, On the hydrostatic theory of the figure of the Earth, H. Jeffreys 196

——, On the expression of gravity formulae, H. Jeffreys 541

Earth, physics of the interior of: Upper mantle inhomogeneity and the low velocity zone, E. R. Oxburgh 456

———, On detecting changes in the Earth's radius, M. A. Ward 217

Everitt, C. W. F. and R. L. Wilson, Thermal demagnetization of some carboniferous lavas for palaeomagnetic purposes 149

Ewing, M., Y. Sato, T. Usami and M. Landisman, Basic studies on the oscillation of a sphere, Part V: Propagation of torsional disturbances on a radially heterogeneous sphere—the case of a homogeneous mantle with a liquid core .. 44

Fielder, G., Four major strike-slip faults on the Moon 187

Gadsden, M. and D. W. Sida, Polar-cap airglow and the terrestrial ambium .. 102

PAGE

Geodesy: Determination of the even harmonics in the Earth's gravitational potential, D. G. King-Hele, G. E. Cook and J. M. Rees 119
——, On the hydrostatic theory of the figure of the Earth, H. Jeffreys 196
Geomagnetism: An anomaly in geomagnetic variations at Mould Bay in the Arctic Archipelago of Canada, K. Whitham 26
——, Geomagnetic time, G. V. Simonov.. 258
——, Polar geomagnetic disturbances, K. D. Cole 268
——, Classification of geomagnetic micropulsations, J. A. Jacobs, Y. Kato, S. Matsushita and V. A. Troitskaya 341
——, The effect of an ocean on magnetic diurnal variations, R. B. Roden 375
——, Sudden local conductivity changes in the ionosphere, J. A. Lawrie 389
——, The energy of magnetic storms, S. Chapman 514
Girdler, R. W. and C. L. Drake, A geophysical study of the Red Sea 473
Girdler, R. W., How genuine is the circum-Pacific belt? 537
Hamilton, N. and R. F. King, Comparison of the bedding errors of artificially and naturally deposited sediments with those predicted from a simple model 370
Hanus, V. and M. Krs, Palaeomagnetic dating of hydrothermal deposits in Czechoslovakia 82
Hunt, J. N., Tidal oscillations in estuaries 440
Ionosphere: Polar-cap airglow and the terrestrial ambium, M. Gadsden and D. W. Sida 102
——, Sudden local conductivity changes in the ionosphere, J. A. Lawrie 389
Irving, E. and P. M. Stott, Palaeomagnetic directions and pole positions, Part VI. Numbers 6/1 to 6/73 249
Jacobs, J. A., Y. Kato, S. Matsushita and V. A. Troitskaya, Classification of geomagnetic micropulsations 341
Jeffreys, H., On the hydrostatic theory of the figure of the Earth 196
Jeffreys, H., On the expression of gravity formulae 541
Jeffreys, H. and M. Shimshoni, The times of pP, sS, sP and pS 324
Jeffreys, H., M. Shimshoni and E. P. Arnold, *S* in three European earthquakes 12
Kato, Y., S. Matsushita, V. A. Troitskaya and J. A. Jacobs, Classification of geomagnetic micropulsations 341
King, R. F. and N. Hamilton, Comparison of the bedding errors of artificially and naturally deposited sediments with those predicted from a simple model .. 370
King-Hele, D. G., G. E. Cook and J. M. Rees, Determination of the even harmonics in the Earth's gravitational potential 119
Krs, M. and V. Hanus, Palaeomagnetic dating of hydrothermal deposits in Czechoslovakia 82
Landisman, M., Y. Sato and T. Usami, Spectrum, phase and group velocities of the theoretical seismograms and the idea of the equivalent surface source of disturbance 1
Landisman, M., Y. Sato, T. Usami and M. Ewing, Basic studies on the oscillation of a sphere, Part V: Propagation of torsional disturbances on a radially heterogeneous sphere—the case of a homogeneous mantle with a liquid core .. 44
Lawrie, J. A., Sudden local conductivity changes in the ionosphere 389

Letters to the Editors: Polar geomagnetic disturbance, K. D. Cole 268
——, On the frequency independence of the acoustic loss factor in Earth materials, D. E. Weston 296
——, Classification of geomagnetic micropulsations, J. A. Jacobs, Y. Kato, S. Matsushita and V. A. Troitskaya 341
——, Antarctic crustal thickness, C. R. Bentley and N. A. Ostenso 467
——, On the expression of gravity formulae, H. Jeffreys 541
McElhinny, M. W., Statistical significance of the fold test in palaeomagnetism .. 338
Magnetic properties of rocks: Electron probe microanalyser analyses of basaltic titanomagnetites and their significance to rock magnetism, J. M. Ade-Hall 301
——, A correlation between remanent magnetism and petrological and chemical properties of tertiary basalt lavas from Mull, Scotland, J. M. Ade-Hall .. 403
——, Magnetic properties and normal and reversed natural magnetization in the Mull lavas, R. L. Wilson 424
Matsushita, S., J. A. Jacobs, Y. Kato and V. A. Troitskaya, Classification of geomagnetic micropulsations 341

PAGE

Seismology: The determination of velocities in the upper mantle from the observations on *P*-waves, T. B. Yanovskaya and I. J. Asbel 313
——, Some statistical methods of detecting signals in noise, G. M. Moltsham, V. F. Pissarenko and N. A. Smirnova 319
——, The times of pP, sS, sP and pS, H. Jeffreys and M. Shimshoni 324
——, Comment on "Seismic delays in the Eastern Caribbean" by K. G. Barr and G. R. Robson, M. Talwani and G. H. Sutton 463
——, Core phases and the inner core boundary, G. P. Subiza and M. Bâth .. 496
——, How genuine is the circum-Pacific belt? R. W. Girdler 537
Shimshoni, M., E. P. Arnold and H. Jeffreys, S in three European earthquakes .. 12
Shimshoni, M. and H. Jeffreys, The times of pP, sS, sP and pS 324
Sida, D. W. and M. Gadsden, Polar-cap airglow and the terrestrial ambium .. 102
Simonov, G. V., Geomagnetic time 258
Smirnova, N. A., G. M. Moltsham and V. F. Pissarenko, Some statistical methods of detecting signals in noise 319
Stoneley, R., The propagation of tsunamis 64
Stoneley, R., The propagation of surface waves in an elastic medium with orthorhombic symmetry 176
Stott, P. M. and E. Irving, Palaeomagnetic directions and pole positions, Part VI. Numbers 6/1 to 6/73 249
Subiza, G. P. and M. Bâth, Core phases and the inner core boundary 496
Sutton, G. H., and M. Talwani, Comment on "Seismic delays in the Eastern Caribbean" by K. G. Barr and G. R. Robson 463
Talwani, M. and G. H. Sutton, Comment on "Seismic delays in the Eastern Caribbean" by K. G. Barr and G. R. Robson 463
Tidal theory: Tidal oscillations in estuaries, J. N. Hunt 440
Troitskaya, V. A., J. A. Jacobs, Y. Kato and S. Matsushita, Classification of geomagnetic micropulsations 341
Usami, T., Y. Sato and M. Landisman, Spectrum, phase and group velocities of the theoretical seismograms and the idea of the equivalent surface source of disturbance 1
Usami, T., Y. Sato, M. Landsiman and M. Ewing, Basic studies on the oscillation of a sphere, Part V: Propagation of torsional disturbances on a radially heterogeneous sphere—the case of a homogeneous mantle with a liquid core .. 44
Walker, G. P. L. and G. Bodvarsson, Crustal drift in Iceland 285
Ward, M. A., On detecting changes in the Earth's radius 217
Weston, D. E., On the frequency independence of the acoustic loss factor in Earth materials 269
Whitham, K. E., An anomaly in geomagnetic variations at Mould Bay in the Arctic archipelago of Canada 26
Willmore, P. L., A strategy for seismology 242
Wilson, R. L. and C. W. F. Everitt, Thermal demagnetization of some carboniferous lavas for palaeomagnetic purposes 149
Wilson, R. L., The palaeomagnetism of some Rhyolites from Northern Ireland .. 235
Wilson, R. L., Magnetic properties and normal and reversed natural magnetization in the Mull lavas 424
Yanovskaya, T. B. and I. J. Asbel, The determination of velocities in the upper mantle from the observations on *P*-waves 313

PAGE

Geodesy: Determination of the even harmonics in the Earth's gravitational potential, D. G. King-Hele, G. E. Cook and J. M. Rees 119
——, On the hydrostatic theory of the figure of the Earth, H. Jeffreys 196

Geomagnetism: An anomaly in geomagnetic variations at Mould Bay in the Arctic Archipelago of Canada, K. Whitham 26
——, Geomagnetic time, G. V. Simonov.. 258
——, Polar geomagnetic disturbances, K. D. Cole 268
——, Classification of geomagnetic micropulsations, J. A. Jacobs, Y. Kato, S. Matsushita and V. A. Troitskaya 341
——, The effect of an ocean on magnetic diurnal variations, R. B. Roden 375
——, Sudden local conductivity changes in the ionosphere, J. A. Lawrie 389
——, The energy of magnetic storms, S. Chapman 514
Girdler, R. W. and C. L. Drake, A geophysical study of the Red Sea 473
Girdler, R. W., How genuine is the circum-Pacific belt? 537
Hamilton, N. and R. F. King, Comparison of the bedding errors of artificially and naturally deposited sediments with those predicted from a simple model 370
Hanus, V. and M. Krs, Palaeomagnetic dating of hydrothermal deposits in Czechoslovakia 82
Hunt, J. N., Tidal oscillations in estuaries 440

Ionosphere: Polar-cap airglow and the terrestrial ambium, M. Gadsden and D. W. Sida 102
——, Sudden local conductivity changes in the ionosphere, J. A. Lawrie 389
Irving, E. and P. M. Stott, Palaeomagnetic directions and pole positions, Part VI. Numbers 6/1 to 6/73 249

Jacobs, J. A., Y. Kato, S. Matsushita and V. A. Troitskaya, Classification of geomagnetic micropulsations 341
Jeffreys, H., On the hydrostatic theory of the figure of the Earth 196
Jeffreys, H., On the expression of gravity formulae 541
Jeffreys, H. and M. Shimshoni, The times of pP, sS, sP and pS 324
Jeffreys, H., M. Shimshoni and E. P. Arnold, *S* in three European earthquakes 12
Kato, Y., S. Matsushita, V. A. Troitskaya and J. A. Jacobs, Classification of geomagnetic micropulsations 341
King, R. F. and N. Hamilton, Comparison of the bedding errors of artificially and naturally deposited sediments with those predicted from a simple model .. 370
King-Hele, D. G., G. E. Cook and J. M. Rees, Determination of the even harmonics in the Earth's gravitational potential 119
Krs, M. and V. Hanus, Palaeomagnetic dating of hydrothermal deposits in Czechoslovakia 82
Landisman, M., Y. Sato and T. Usami, Spectrum, phase and group velocities of the theoretical seismograms and the idea of the equivalent surface source of disturbance 1
Landisman, M., Y. Sato, T. Usami and M. Ewing, Basic studies on the oscillation of a sphere, Part V: Propagation of torsional disturbances on a radially heterogeneous sphere—the case of a homogeneous mantle with a liquid core .. 44
Lawrie, J. A., Sudden local conductivity changes in the ionosphere 389

Letters to the Editors: Polar geomagnetic disturbance, K. D. Cole 268
——, On the frequency independence of the acoustic loss factor in Earth materials, D. E. Weston 296
——, Classification of geomagnetic micropulsations, J. A. Jacobs, Y. Kato, S. Matsushita and V. A. Troitskaya 341
——, Antarctic crustal thickness, C. R. Bentley and N. A. Ostenso 467
——, On the expression of gravity formulae, H. Jeffreys 541
McElhinny, M. W., Statistical significance of the fold test in palaeomagnetism .. 338

Magnetic properties of rocks: Electron probe microanalyser analyses of basaltic titanomagnetites and their significance to rock magnetism, J. M. Ade-Hall 301
——, A correlation between remanent magnetism and petrological and chemical properties of tertiary basalt lavas from Mull, Scotland, J. M. Ade-Hall .. 403
——, Magnetic properties and normal and reversed natural magnetization in the Mull lavas, R. L. Wilson 424
Matsushita, S., J. A. Jacobs, Y. Kato and V. A. Troitskaya, Classification of geomagnetic micropulsations 341

PAGE

Microseisms: A study of microseisms in South Africa, J. Darbyshire 165
Moltsham, G. M., V. F. Pissarenko and N. A. Smirnova, Some statistical methods of detecting signals in noise 319
Moon, Physics of the: Four major strike-slip faults on the Moon, G. Fielder .. 187
Oceanography: The propagation of tsunamis, R. Stoneley 64
Ostenso, N. A. and C. R. Bentley, Antarctic crustal thickness 467
Oxburgh, E. R., Upper mantle inhomogeneity and the low velocity zone 456
Palaeomagnetism: Palaeomagnetic dating of hydrothermal deposits in Czechoslovakia, V. Hanus and M. Krs 82
——, Thermal demagnetization of some carboniferous lavas for palaeomagnetic purposes, R. L. Wilson and C. W. F. Everitt 149
——, On detecting changes in the Earth's radius, M. A. Ward 217
——, Palaeomagnetism of Prince Edward Island, J. L. Roy 226
——, The palaeomagnetism of some Rhyolites from Northern Ireland, R. L. Wilson 235
——, Palaeomagnetic directions and pole positions, Part VI. Numbers 6/1 to 6/73, E. Irving and P. M. Stott 249
——, Statistical significance of the fold test in palaeomagnetism, M. W. McElhinny 338
——, Angular dispersion due to random magnetization, A. Cox 345
——, Measurements of the natural remanent magnetism and anisotropy of susceptibility of some Swedish glacial silts, A. I. Rees 356
——, Comparison of the bedding errors of artificially and naturally deposited sediments with those predicted from a simple model, N. Hamilton and R. F. King 370
——, A correlation between remanent magnetism and petrological and chemical properties of tertiary basalt lavas from Mull, Scotland, J. M. Ade-Hall .. 403
——, Magnetic properties and normal and reversed natural magnetization in the Mull lavas, R. L. Wilson 424
Pissarenko, V. F., G. M. Moltsham and N. A. Smirnova, Some statistical methods of detecting signals in noise 319
Rees, J. M., D. G. King-Hele and G. E. Cook, Determination of the even harmonics in the Earth's gravitational potential 119
Rees, A. I., Measurements of the natural remanent magnetism and anisotropy of susceptibility of some Swedish glacial silts 356
Research Notes: Statistical significance of the fold test in palaeomagnetism, M. W. McElhinny 338
——, Comment on "Seismic delays in the Eastern Caribbean" by K. G. Barr and G. R. Robson, M. Talwani and G. H. Sutton 463
——, How genuine is the circum-Pacific belt? R. W. Girdler 537
Roden, R. B., The effect of an ocean on magnetic diurnal variations 375
Roy, J. L., Palaeomagnetism of Prince Edward Island 226
Sato, Y., T. Usami and N. Landisman, Spectrum, phase and group velocities of the theoretical seismograms and the idea of the equivalent surface source of disturbance 1
Sato, Y., T. Usami, M. Landisman and M. Ewing, Basic studies on the oscillation of a sphere, Part V: Propagation of torsional disturbances on a radially heterogeneous sphere—the case of a homogeneous mantle with a liquid core .. 44
Seismology: Spectrum, phase and group velocities of the theoretical seismograms and the idea of the equivalent surface source of disturbance, Y. Sato, T. Usami and M. Landisman 1
——, *S* in three European earthquakes, E. P. Arnold, H. Jeffreys and M. Shimshoni 12
——, The *S* head wave at a liquid–solid boundary, R. J. Donato 17
——, Basic studies on the oscillation of a sphere, Part V: Propagation of torsional disturbances on a radially heterogeneous sphere—the case of a homogeneous mantle with a liquid core, Y. Sato, T. Usami, M. Landisman and M. Ewing 44
——, The propagation of tsunamis, R. Stoneley 64
——, The propagation of surface waves in an elastic medium with orthorhombic symmetry, R. Stoneley 176
——, Amplitude of the head wave near the critical angle, R. J. Donato 203
——, Note on the propagation of Love waves in a certain type of heterogeneous layer lying on homogeneous medium, S. Dutta 231
——, A strategy for seismology, P. L. Willmore 242
——, On the frequency independence of the acoustic loss factor in Earth materials, D. E. Weston 269

PAGE

Seismology: The determination of velocities in the upper mantle from the observations on *P*-waves, T. B. Yanovskaya and I. J. Asbel 313
——, Some statistical methods of detecting signals in noise, G. M. Moltsham, V. F. Pissarenko and N. A. Smirnova 319
——, The times of pP, sS, sP and pS, H. Jeffreys and M. Shimshoni 324
——, Comment on "Seismic delays in the Eastern Caribbean" by K. G. Barr and G. R. Robson, M. Talwani and G. H. Sutton 463
——, Core phases and the inner core boundary, G. P. Subiza and M. Båth .. 496
——, How genuine is the circum-Pacific belt? R. W. Girdler 537
Shimshoni, M., E. P. Arnold and H. Jeffreys, *S* in three European earthquakes .. 12
Shimshoni, M. and H. Jeffreys, The times of pP, sS, sP and pS 324
Sida, D. W. and M. Gadsden, Polar-cap airglow and the terrestrial ambium .. 102
Simonov, G. V., Geomagnetic time 258
Smirnova, N. A., G. M. Moltsham and V. F. Pissarenko, Some statistical methods of detecting signals in noise 319
Stoneley, R., The propagation of tsunamis 64
Stoneley, R., The propagation of surface waves in an elastic medium with orthorhombic symmetry 176
Stott, P. M. and E. Irving, Palaeomagnetic directions and pole positions, Part VI. Numbers 6/1 to 6/73 249
Subiza, G. P. and M. Båth, Core phases and the inner core boundary 496
Sutton, G. H., and M. Talwani, Comment on "Seismic delays in the Eastern Caribbean" by K. G. Barr and G. R. Robson 463
Talwani, M. and G. H. Sutton, Comment on "Seismic delays in the Eastern Caribbean" by K. G. Barr and G. R. Robson 463
Tidal theory: Tidal oscillations in estuaries, J. N. Hunt 440
Troitskaya, V. A., J. A. Jacobs, Y. Kato and S. Matsushita, Classification of geomagnetic micropulsations 341
Usami, T., Y. Sato and M. Landisman, Spectrum, phase and group velocities of the theoretical seismograms and the idea of the equivalent surface source of disturbance 1
Usami, T., Y. Sato, M. Landsiman and M. Ewing, Basic studies on the oscillation of a sphere, Part V: Propagation of torsional disturbances on a radially heterogeneous sphere—the case of a homogeneous mantle with a liquid core .. 44
Walker, G. P. L. and G. Bodvarsson, Crustal drift in Iceland 285
Ward, M. A., On detecting changes in the Earth's radius 217
Weston, D. E., On the frequency independence of the acoustic loss factor in Earth materials 269
Whitham, K. E., An anomaly in geomagnetic variations at Mould Bay in the Arctic archipelago of Canada 26
Willmore, P. L., A strategy for seismology 242
Wilson, R. L. and C. W. F. Everitt, Thermal demagnetization of some carboniferous lavas for palaeomagnetic purposes 149
Wilson, R. L., The palaeomagnetism of some Rhyolites from Northern Ireland .. 235
Wilson, R. L., Magnetic properties and normal and reversed natural magnetization in the Mull lavas 424
Yanovskaya, T. B. and I. J. Asbel, The determination of velocities in the upper mantle from the observations on *P*-waves 313